

Interpretation of the Electrical Safety Committee – December 2005

Are Spare Breakers Required to be Labeled?

Summary

After review of the relevant OSHA and NEC codes, the LESC has concluded that spare breakers are not required to be labeled as “Spare”. This conclusion is supported by inquiries on the DOE list serve, industry bulletin boards, and discussion at the November 2005 DOE Electrical Safety Committee Meeting.

In addition, the committee felt it should not mandate this as a good practice.

Relevant Codes Sections

OSHA 1910.303 (f) Identification of disconnecting means and circuits.

Each disconnecting means required by this subpart for motors and appliances shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. Each service, feeder, and branch circuit, at its disconnecting means or overcurrent device, shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. These markings shall be of sufficient durability to withstand the environment involved

NFPA 70 Article 110.22 Identification of Disconnecting Means

Each disconnecting means shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident.

The NEC Handbook indicates refer to Article 408.4 for circuit directories for panelboard and switchboards.

NFPA 70 Article 408.4 Circuit Directory or Circuit Identification

Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use.

NFPA 70E Section 400.14 Identification of Disconnecting Means.

(A) General. Each disconnecting means shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident. The marking shall be of sufficient durability to withstand the environment involved.

Discussion / Analysis

OSHA 1910.303 is a paraphrase of NFPA 70 Article 110.22 requiring disconnecting means such as a circuit breaker to be labeled to clearly indicate what is connected to it. These marking are to be legible. NFPA 110.22 is similar as the one would expect since OSHA was derived from a past version of NFPA 70 and it would appear the same article, due to the similarity of the text. The NFPA 70 Handbook notes under Article 110.22 refer to Article 408.4 as the guiding Article for circuit panel directories. Article 408.4 clearly indicates that each circuit be clearly identified in the panel directory.

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This leads to the question, is a spare a circuit. Our conclusion is no. A circuit is defined as, "A number of electrical components, such as resistors, inductances, capacitors, transistors, and power sources connected together in one or more closed loops." Clearly a breaker with no wires does not form a circuit and as such one concludes that NFPA 70 Article 408.4 does not require it to be labeled.

Under Article 90 of NFPA 70E the Handbook in the introduction clearly indicates the intent of the NFPA to have consistency between NFPA 70 and NFPA 70E with NFPA 70 governing installations and NFPA 70E governing the workplace. NFPA 70E Section 400.14 essentially reads the same as NFPA 70 Article 110.22 and only provides clear guidance that labeling be clear. Labeling a circuit card would be part of the installation of a circuit just as the installation of the wires would be, thus the NFPA 70 is the governing standard for all but the work practices such as use of PPE which would be under NFPA 70E. In addition, it states the purpose shall be evident. Thus not marking should be construed to be no purpose or in this case no circuit. Thus we see no inconsistency here.

Thus the conclusion of the Laboratory Electrical Safety Committee is that spare breakers are not required by the NFPA or OSHA to be labeled.

Review By Others

To further support our interpretation, the LESC posed this on code forums and discussed this with industry experts as follows:

Mike Holt's Code Forums (<http://www.mikeholt.com/codeforum>)

Question:

Is it a NEC requirement to identify "spare circuit breakers" in a panel directory? The code identifies in article 110.22/408.4 that each disconnecting means shall be legibly marked to indicate its purpose..... Is a spare that is connected to nothing a disconnecting means if its for nothing?

Does the directory need to say spare? Can this create future problems if the directory is updated and not legible?

Responses:

I usually leave it blank on the panel schedules I type up, so that there's room to hand write in added circuits. Once, though, the electrical engineer told me to retype it to tell which circuits were spares.

You answered your own question.

Is a spare that is connected to nothing a disconnecting means if it's for nothing?

no

Can this create future problems if the directory is updated and not legible?

yes

Discussion at the DOE November 2005 Electrical Safety Committee Meeting

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Having received only a few responses on the code forum the issue was presented in general session at the DOE Electrical Safety Committee meeting. This meeting is attended by DOE-EH, representatives from most sites some of which are members of the NFPA 70 and 70E code panels, and invited industry electrical safety experts. The clear consensus was in agreement with the BNL LESC interpretation that the standards do not require the label of spare breakers.

Is it a good practice to label spares?

After a lot of discussion as described above we would say that there is not clear consensus on this question. The primary arguments are as follows:

OSHA, NFPA 70 and NFPA 70E are clear that labeling must be clear and legible. If one takes up some of the directory card space provided for a circuit and writes "Spare" that does not leave much space to write in a circuit if a device is connected in the future. That would not likely result in a legible card, and would represent a violation of the standards. Optionally, the electrician would have to take the card, bring it back to the shop for a clerk to make a new card, with the new circuit typed in, then bring it back and insert it. This could easily cost more than \$100 in time for the electrician and clerk. This would be instead of having the electrician simply write the new circuit on the blank line a simple task.

An opposing question to answer would be, what would someone assume about an unlabeled circuit breaker? The committee felt the answer is they would assume nothing, most likely seeing it as a spare. The other alternative is that it does have a circuit and is mislabeled. The committee was not aware of any imperial data to assume there was more chance of a spare circuit breaker not labeled being mislabeled than any other circuit breaker.

Thus the committee's conclusion was that there was no supporting reason to mandate this by BNL policy.